

# HAY FEVER

## CANADIAN HAVENS FROM

POSITIONS OF RAILROAD MATERIAL

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CANADIAN GOVERNMENT TRAVEL BUREAU

OTTAWA, CANADA



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# canadian havens from hay fever

## 1965

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# foreword

## *nesting to*

This booklet presents authentic and up-to-date information on the incidence in Canada of ragweed pollen, principal cause of hay fever, so that sufferers may plan their Canadian vacations accordingly. It is prepared for the more than ten million ragweed pollen victims in the United States and the eight hundred thousand more in Eastern Canada.

Many holiday areas in Canada are entirely free from the irritant, and others have so low a ragweed pollen air-index that they offer similar vacation relief. The booklet, a digest of all available information on ragweed pollen in Canada, seeks to answer in some detail the questions most often asked on the subject. May it prove of real value to those who most appreciate the importance of this public health problem—the victims of hay fever.

# biology of pollen

ALL FLOWERING PLANTS PRODUCE POLLEN BUT NOT ALL POLLEN IS IMPORTANT IN HAY FEVER.

THE POLLEN OF WIND-POLLINATED PLANTS IS THE CAUSE OF MOST OF THE HAY FEVER.

Transportation of pollen from the anthers (the male sexual organs in plants) to the ovary (the female organ) is brought about by a variety of agencies of which wind and insects are the most important. Pollen from insect-pollinated plants is usually larger, stickier, and less buoyant than pollen of wind-pollinated plants and it rarely causes hay fever. Most of the plants with showy flowers are insect-pollinated. Some of these plants bloom during the fall hay fever season and are frequently falsely accused as causative agents. Pollens of some insect-pollinated plants, such as the goldenrods, can certainly produce hay fever symptoms but normally the heavy sticky pollen is carried by insects or it drops to the ground close to the plants.

Not all wind-pollinated plants, however, have toxic pollen. The pollen of spruce, for example, although produced in enormous quantities, has not been shown to be responsible for causing hay fever. In order to be of importance in hay fever, plants must be widely distributed and abundant. They must also produce large quantities of pollen which is airborne and toxic. This combination of characters is present in only a comparatively few plants including certain weeds: ragweeds, Russian thistle, summer cypress, wormwoods, pigweeds, plantains; some grasses, such as timothy, Kentucky blue grass and orchard grass; and a few trees: alder, poplars, oaks, ashes, birches, beech, elms, and maples. Pollen from any of these plants and a number of others may produce the usual distressing symptoms, but ragweed, because of its specific toxic qualities and abundance, is the bane of the greatest number of sufferers.



# kinds of ragweed

RAGWEEDS ARE COARSE, WEEDY-LOOKING HERBS, WITH GREENISH INCONSPICUOUS WIND-POLLINATED FLOWERS GROUPED IN HEADS.

The pollen-producing flowers are in spikes terminating the stem and branches. The female flowers are borne in groups of 1 to 3, below the male spikes, at the base of the upper leaves and close to the stems. Ragweeds are native to North America. With the clearing of land and intensification of agriculture, they have spread to become serious pests, particularly in the East.

Three species of ragweed occur in Canada:

The common or short ragweed, *Ambrosia artemisiifolia* L., is a grayish green annual from 6 inches to 5 feet in height, with bushy branches and finely divided leaves (Figure 1). This species is by far the most abundant of the ragweeds and the most important factor in hay fever in Eastern North America. It is found under a wide variety of soil and moisture conditions in cultivated fields, vacant lots, waste places, roadsides and fence rows. This plant is known in every province of Canada.

Giant or great ragweed, also called kinghead, *Ambrosia trifida* L., is a robust annual, from 1½ to 9 feet in height, with fewer and larger leaves than the common ragweed. The leaves are rough and usually have three coarse lobes (Figure 2). This plant is found along roadsides, in agricultural fields, and in waste places near towns. It is sometimes found in more undisturbed habitats, marshes that dry out in summer or on rich moist soils near streams, and reaches its greatest stature under these conditions. Although much less abundant than common ragweed in the East and of far less importance as a hay fever plant, it is the most frequently occurring ragweed in southern Manitoba.

The perennial or western ragweed, *Ambrosia coronopifolia* (T. & G.) Farw., has a perennial creeping root system (Figure 3). Apart from having this character, it resembles the common ragweed in general appearance, although it is usually a smaller plant with hairier and less finely lobed leaves. Western habitats include native prairie, pastures and roadsides, generally on the drier sandier soils. In the East this plant is also found on sandy soils in pasture and on roadsides but more often along railroads or adjacent railway installations. In more recent years, perennial ragweed, the least common of the three species, has been noticed frequently in Ontario and Quebec.



RAGWEED POLLEN

FIGURE 1

Common ragweed — *Ambrosia artemisiifolia* A. Plant; B. head of male flowers; C. "seed".



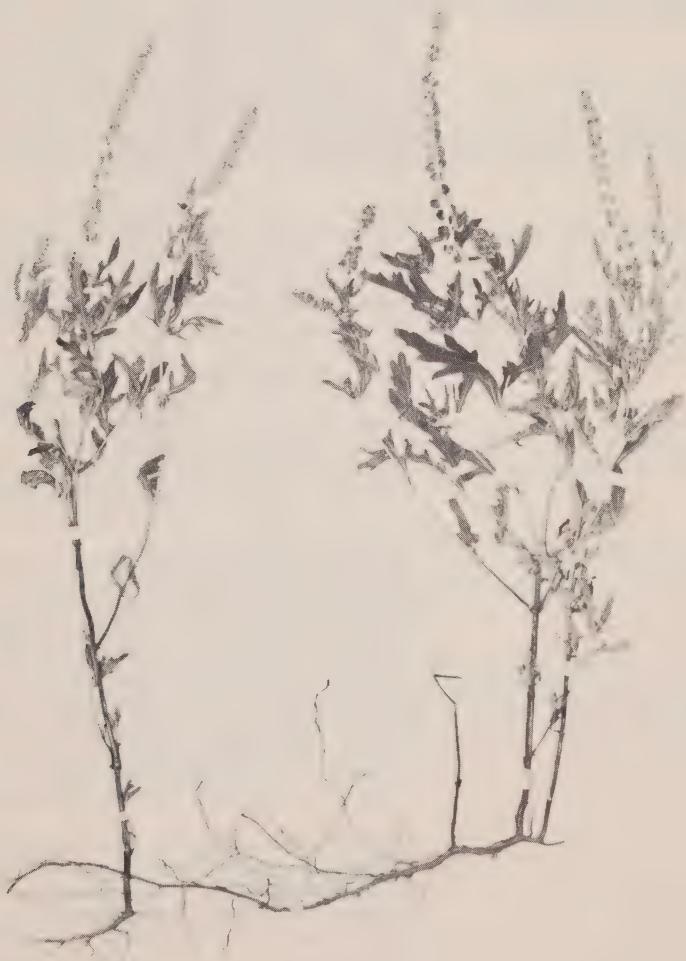
FIGURE 2

Giant ragweed — *Ambrosia trifida*. A. Plant; B. head of male flowers from above showing 3 distinct dark lines; C. head of male flowers in side view; D. "seed".



**FIGURE 3**

Perennial or Western Ragweed — *Ambrosia coronopifolia*. This plant is the least common to the three species. It resembles the common ragweed in general appearance.



# distribution of hay fever in canada

The abundance of ragweed and ragweed pollen in the various Canadian provinces is dealt with below. Other hay fever plants are mentioned where data are available, and some indication is given of the length of the different hay fever periods throughout the growing season.

## ATLANTIC PROVINCES

The Atlantic Provinces of Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland are fortunate in having comparatively little ragweed. Ragweeds do occur and are widely spread, but only in the Annapolis Valley and a few other areas are there fairly extensive stands. But even in these areas the situation in regard to this pest is very different to that in southern Ontario and Quebec, where ragweed is a serious agricultural weed.

Reference to the Ragweed Air-Pollen Indexes will show that very little of the sampling so far carried out in the Atlantic Provinces has resulted in a high index. Almost complete absence of ragweed and the low indexes for St. John's and Corner Brook are convincing evidence that Newfoundland is a safe haven for ragweed pollen sufferers.

It is encouraging to note that Nova Scotia, Prince Edward Island and New Brunswick are carrying out control and survey campaigns with a great deal of success. The ragweed situation in the larger part of these areas is quite satisfactory at present and the efforts planned and under way will ensure the continuance of this state of affairs and may even lead to complete eradication.

## QUEBEC

For those susceptible to ragweed pollen the most satisfactory and accessible area in Quebec is the Gaspe Peninsula. Since 1936, the Quebec Department of Agriculture has been carrying out a ragweed eradication campaign in the Gaspe Peninsula, and the limited amounts of ragweed originally present have been further reduced. The Lake St. John district and the large northern counties of Temiscamingue and Abitibi, including the mining towns of Noranda, Rouyn and Val d'Or, are safe refuges from ragweed. This situation also prevails in several localities in the Laurentian area north of Montreal.

The rich lowlands along the Ottawa and St. Lawrence rivers, bounded to the north by the Laurentians, to the south by the Appalachians of the Eastern Townships and extending east to Quebec, is polluted with ragweed and not recommended for ragweed pollen sufferers.

Hay fever seasons in southern Quebec are very similar to those mentioned under Ontario.

## ONTARIO

Northern Ontario, including the towns of Temagami, Kirkland Lake, Timmins, Cochrane, Kapuskasing, Sudbury and Sault Ste. Marie, is considered a safe retreat. Dorset, Rosseau and some of the other wooded areas in the Muskoka Lakes District should be nearly as satisfactory. The area about Lake Nipissing is not free from ragweed but the index figures for 1951-53 at North Bay suggest that this locality should be safe. The greater part of southern Ontario including many of Ontario's major cities is heavily polluted with ragweed.

In general, hay fever in Ontario is caused by tree pollens in April and May, grass pollens in June and July, and ragweed pollens in the late summer. Ragweed pollen is at the highest incidence from the middle of August to the middle of September.

## MANITOBA

Riding Mountain National Park and the north of the province are havens for those in search of an escape from ragweed pollen. The ragweed pollen air-index figures for Morris and Emerson reflect the fact that infestations of giant ragweed occur in the rich agricultural districts in the Red River Valley. Common ragweed occurs at Winnipeg and other sites in southern Manitoba.

Other plants which contribute to hay fever in Manitoba are trees from the first of May to early June, grasses from June to the end of July, and Russian thistle and sages in August.

## SASKATCHEWAN

Ragweed pollen sufferers should be symptom-free anywhere in the province. The only possible exception is the extreme south where burweed marsh elder and poverty weed are found in abundance.

The most important sources of hay fever pollen in Saskatchewan are the grasses, Russian thistle, sages and a few trees such as the poplars, elm, box-elder and birches. Russian thistle is a common weed in agricultural lands and waste places.

## ALBERTA

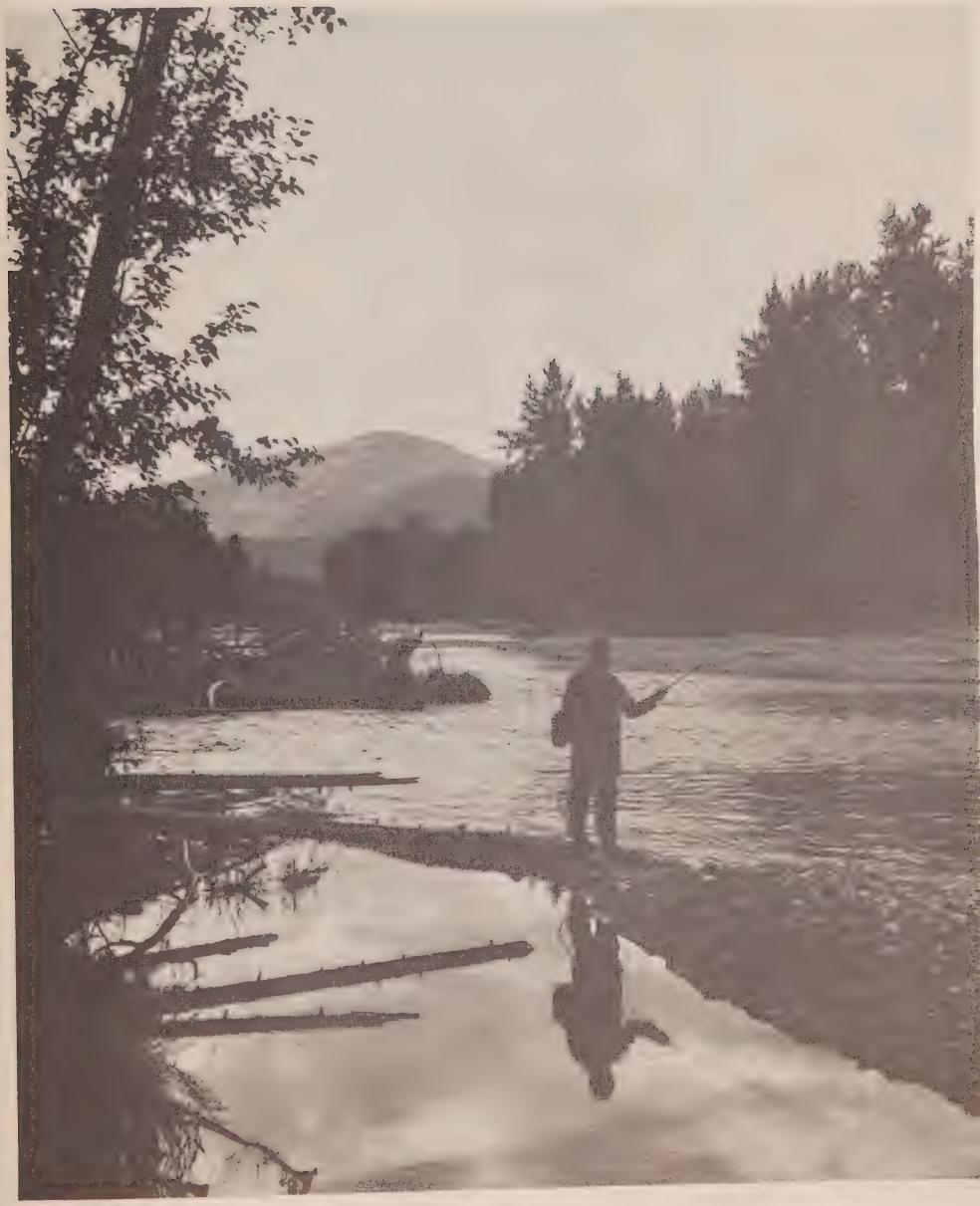
Practically all sections of the province are considered safe for people sensitive to ragweed pollen. The possible exception is in the southeast, where burweed marsh elder and other ragweed relatives are fairly common.

Tree pollens occur abundantly in the forested areas in April and May; the grasses produce pollen from June to September, but mostly in July; and Russian thistle and sages pollinate in July and August.

## BRITISH COLUMBIA

For ragweed pollen sufferers, the province as a whole is undoubtedly one of the safest areas in Canada. Although all three ragweeds, burweed marsh elder and false ragweed occur, they are rare plants and their pollen adds little to the air-borne total.

Pollen from trees, grasses and a few weeds plays a much more important role in British Columbia than ragweed pollen. In the southwestern part of the province the tree hay fever season probably extends from late February to May. This is followed by a grass season from late April to mid-October with the peak count in June, a plantain season from May to September with the peak count also in June, and a season of sagebrushes and Russian thistle from August to mid-October. In inland British Columbia, sagebrushes and Russian thistle are undoubtedly more important than on the coast.



# ragweed pollen index for canada

Throughout North America, standard methods and apparatus are utilized for the collection of pollen grains. Slides are exposed daily, in some cases for several months, but usually from August 1 to the end of September, the ragweed hay fever season. Calculations based on the pollen catches permit the derivation of a ragweed pollen air-index. The index indicates the degree of exposure in any particular community. As the methods and calculations are uniform, this index permits comparisons of various localities.

All ragweed pollen air-indexes for Canada are listed in the following table.

Individuals sensitive to ragweed pollen are usually sensitive to pollens of poverty weed (*Iva axillaris*), burweed marsh elder (*Iva xanthifolia*), false ragweed (*Franseria spp.*), and cockleburs (*Xanthium spp.*). Pollens of these plants appearing on test slides are added to those of the ragweeds in computing the air-indexes. Marsh elder is the most abundant of this group in Canada. These ragweed relatives may be more important than the ragweeds in some areas of Western Canada, but in the East they influence the index figures to a very minor degree.

The techniques employed in this work and the margins of safety noted at the beginning of the list of indexes are those recommended by the Pollen Survey Committee of the American Academy of Allergy. Much of the earlier information for the Canadian stations was obtained by this Committee under the Chairmanship of Mr. O. C. Durham. Most of the New Brunswick data in this list were made available by Dr. C. W. Argue who, at the University of New Brunswick, is in charge of the ragweed pollen studies financially supported by the New Brunswick Bureau of Information. Drs. M. G. Dudley and C. H. A. Walton of Winnipeg were responsible for much of the earlier data from Manitoba. Recent index figures for the majority of stations in Quebec and Ontario were supplied by the provincial Departments of Agriculture. Practically all other stations were the responsibility of the Canada Department of Agriculture, in large part with the co-operation of Dr. E. Campagna, La Faculté d'Agronomie, Université Laval, Québec; and with authorities at the University of Alberta.

map  
reference  
number

province  
and  
locality

period of  
ragweed  
pollen  
survey

average  
ragweed  
pollen  
air-index

ANY CITY OR COMMUNITY HAVING AN INDEX  
above 10 is not recommended  
between 5 and 10 is fairly good  
below 5 is good  
below 1 is excellent

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NEWFOUNDLAND			
1.	St. John's	1950-55	0.3
2.	Corner Brook	1951 & 1955	0.2
-	Mount Pearl (near St. John's)	1954	0.1

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NOVA SCOTIA			
3.	Ingonish Island	1950-55	1.4
4.	Cape Breton Highlands National Park (Ingonish Beach)	1950-55	0.9
5.	Baddeck	1951-54	0.4
6.	Antigonish	1951-55	0.4
7.	Truro	1950-54	0.2
8.	Kentville	1953-55	4.7
9.	Halifax	1954	1.9
10.	Chester	1951-55	0.3
11.	Digby	1951-55	3.2
12.	Meteghan	1951-52	4.5
13.	Yarmouth	1952-56	4.5
14.	Middle West Pubnico	1951	0.3

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PRINCE EDWARD ISLAND			
15.	Souris	1952-56	1.0
16.	Montague	1952-56	0.6
17.	Charlottetown	1952-56	1.4
18.	P.E.I. National Park (Dalvay House)	1952-56	3.0
19.	Cavendish	1952-54	1.8
20.	Summerside	1952-56	1.0
21.	O'Leary	1952-56	1.4
22.	Tignish	1952-56	1.2

map reference number	province and locality	period of ragweed pollen survey	average ragweed pollen air-index
NEW BRUNSWICK			
23.	Sackville	1952-63	1.1
24.	Pointe du Chene	1952-53	20.0
		1954-63	3.5*
25.	Shediac Cape	1952-54	0.6
26.	Moncton	1952-63	0.4
27.	Fundy National Park	1950-55	5.5
		1959-63	0.5*
28.	Sussex	1952-63	1.1
29.	Chipman	1952-63	0.7
30.	Jemseg	1952-63	3.6
31.	Gagetown	1952-53	19.5
		1954-63	1.7*
32.	Saint John	1952-63	0.4
33.	Welsford	1952-63	0.6
34.	Fredericton	1950-63	0.3
35.	St. George	1952-63	0.6
36.	St. Andrews	1952-63	0.6
37.	St. Stephen	1952-63	0.7
38.	Grand Manan	1956-63	0.4
39.	McAdam	1956-63	0.6
40.	Woodstock	1952-63	0.4
41.	Perth-Andover	1952-63	0.3
42.	Edmundston	1952-63	0.3
43.	Doaktown	1952-63	0.3
44.	Richibucto	1958-63	0.2
45.	Newcastle-Chatham	1952-63	0.3
46.	Tracadie	1956-63	1.7
47.	Bathurst	1954-63	0.1
48.	Dalhousie	1952-63	0.2
49.	Campbellton	1952-63	0.0

\*This figure is included to indicate the reduction in the pollen index since the inception of control campaigns in 1954.

map reference number	province and locality	period of ragweed pollen survey	average ragweed pollen air-index
<b>QUEBEC</b>			
50.	Matapedia	1938	0.1
51.	Carleton	1949-56	0.7
52.	New Carlisle	1938	3.0
53.	Chandler	1938	0.1
54.	Grand Riviere	1949-52	0.2
55.	Perce	1949-56	0.7
56.	Gaspe	1949-56	0.2
57.	Isles de la Madeleine	1941	0.1
58.	Mont-Albert	1939	0.1
59.	Matane	1954-56	2.2
60.	Mont Joli	1938	0.2
61.	Father Point	1934-35	1.0
62.	Rimouski	1949-56	3.0
63.	Riviere du Loup	1949-56	4.3
64.	Tadoussac	1951-56	1.2
65.	Jonquieres (Chicoutimi)	1953-55	3.0
66.	Normandin	1939-41	3.0
67.	Baie St. Paul	1954-56	3.3
68.	Ste. Anne de la Pocatiere	1949-56	10.6
69.	Charlesbourg	1939-41	2.0
70.	Quebec City	1949-55	11.1
71.	Sherbrooke	1951-55	16.4
72.	Lennoxville	1939-41	4.0
73.	Victoriaville	1951-55	29.6
74.	Cap de la Madeleine	1953-55	43.4
75.	Berthierville	1939-41	33.0
76.	Farnham	1939	64.0
77.	Montreal Area:		
	Dorval	1962-64	26.4
	McGill University	1962-63	25.1
	Beaconsfield	1961	22.6
78.	Ste. Anne de Bellevue	1950-55	37.9
79.	Lac des Seize Iles	1949-52	9.1
80.	Ste. Agathe	1960-63	7.1
81.	St. Jovite	1960-63	3.7
82.	Mont Tremblant	1960-63	1.4
83.	Nomingue	1952-56	6.5
84.	Lac-des-Plages	1960-63	6.3
85.	Mont Laurier	1953-55	5.2
86.	Luskville	1950-51	21.0
	St. Jerome	1960-63	17.2
	Labelle	1960-63	22.6

map reference number	province and locality	period of ragweed pollen survey	average ragweed pollen air-index
	ONTARIO		
87.	Cornwall	1953-54	22.2
88.	Ottawa	1950-64	14.4
89.	St. Lawrence Islands National Park (Mallorytown)	1950-52	33.2
90.	Smiths Falls	1957-59	14.2
91.	Westport (Rideau Lakes)	1957-59	7.6
92.	Picton	1956	38.2
93.	Belleville	1956	30.2
94.	Madoc	1957-59	21.4
95.	Renfrew	1958-60	4.9
96.	Pembroke	1958-60	4.5
97.	Barry's Bay	1957-59	1.1
		1963-64	7.5
98.	Bancroft	1955-57	8.1
99.	Chalk River	1954-56	4.5
100.	Mattawa	1958-60	1.5
101.	Peterborough	1953-54	33.4
102.	Haliburton	1956-58	1.9
		1963-64	3.8
103.	Algonquin Park	1952-55	12.3
		1963	1.5
104.	Dorset	1952-54	6.1
105.	Huntsville	1953-56	9.4
		1963-64	5.9
106.	Muskoka Falls	1955-57	4.6
107.	Gravenhurst	1955-57	16.8
108.	Port Carling	1955-57	9.6
109.	Lake Joseph (Muskoka)	1951	4.0
110.	Rosseau	1957-59	3.7
111.	Parry Sound	1955-56	19.4
112.	Magnetawan	1957-59	3.5
		1963-64	6.0
113.	South River	1957-59	1.8
114.	North Bay	1951-53	7.5
115.	Toronto Area:		
	Core of Central Zone	1957-64	36.5
	Humber R. near Lake	1957-64	47.5
	Metro-Central	1957-64	41.5
	East Metro	1957-64	51.5
	North West Metro	1957-64	60.4
116.	Hamilton	1946-60	53.2
117.	Georgian Bay Islands National Park (Beausoleil Island)	1950-53	14.8
118.	Midland	1954	11.5
119.	London	1953-54	38.5
120.	Point Pelee National Park	1950-52	38.5
121.	Kincardine	1958-60	22.4
122.	Wiarton	1958-60	16.9

map reference number	province and locality	period of ragweed pollen survey	average ragweed pollen air-index
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	(Ontario — continued)		
123.	Lion's Head	1958-60	18.3
124.		1963-64	11.4
125.	Tobermory	1956-58	5.2
	Mindemoya (Manitoulin Island)	1952-55	7.7
126.	Espanola	1956-59	3.9
127.	Sudbury	1954-55	3.4
128.	Temagami	1954-55	2.4
129.	New Liskeard	1956-57	0.3
130.	Timmins	1958-59	0.2
131.	Cochrane	1934-35	2.0
132.	Kapuskasing	1951-52	0.4
133.	Blind River	1956-57	2.5
134.	Sault Ste. Marie	1952-54	6.2
135.	Port Arthur	1957-59	0.9
136.	10 miles S.W. of Fort William	1956	0.1
137.	Black Sturgeon Lake (Thunder Bay District)	1952	2.3
138.	Fort Frances	1956-57	1.0
139.	Cedar Lake (Kenora District)	1952-54	3.4
140.	Kenora	1956-58	6.2
	Kingston	1961-63	29.4
	Calabogie	1963-64	9.2
	Guelph	1963-64	30.5
	Inverhuron Park	1964	27.4
	Kasshabog Lake (Near Marmora)	1963-64	9.6
	Port Franks	1964	37.5
	Presqu'ile Park	1963	18.4

	MANITOBA		
141.	Winnipeg	1947-54	7.0
		1960-62	4.1
142.	Steinbach	1960-62	2.1
143.	Morris	1960-62	18.6
144.	Emerson	1960-61	4.7
145.	Morden	1940	12.0
		1960-62	3.6
146.	Mather	1960-61	2.3
147.	Pierson	1940	6.0
		1960-62	3.5
148.	Brandon	1961-62	5.0
149.	Portage la Prairie	1960-62	1.5
150.	Russell	1940	1.0
151.	Riding Mountain		
	National Park	1950	0.2
152.	Dauphin	1940	5.0
153.	The Pas	1940	0.1

map reference number	province and locality	period of ragweed pollen survey	average ragweed pollen air-index
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SASKATCHEWAN			
154.	Estevan	1960-62	2.5
155.	Weyburn	1960-62	2.9
156.	Carlyle	1960-62	1.6
157.	Regina	1955	0.3
158.	Swift Current	1952-53	1.3
159.	Saskatoon	1951-53	0.3
160.	Scott	1955	0.1
161.	Melfort	1955	0.1
162.	Prince Albert	1930	0.1
163.	Prince Albert National Park (Waskesiu)	1951	.0

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ALBERTA			
164.	Cypress Hills	1952	.0
165.	Manyberries	1950-51	0.1
166.	Medicine Hat	1950-51	7.0
167.	Lethbridge	1950-51	1.0
168.	Waterton Lakes National Park	1952	.0
169.	Coleman	1950-51	.0
170.	Calgary	1950-51	.0
171.	Drumheller	1950-51	1.0
172.	Banff (Banff National Park)	1950-51	.0
173.	Lake Louise (Banff National Park)	1950-51	.0
174.	Jasper (Jasper National Park)	1952	.0
175.	Vermillion	1950-51	.0
176.	Edmonton	1950-51	.0
177.	Beaver Lodge	1950-51	.0

map  
reference  
number

province  
and  
locality

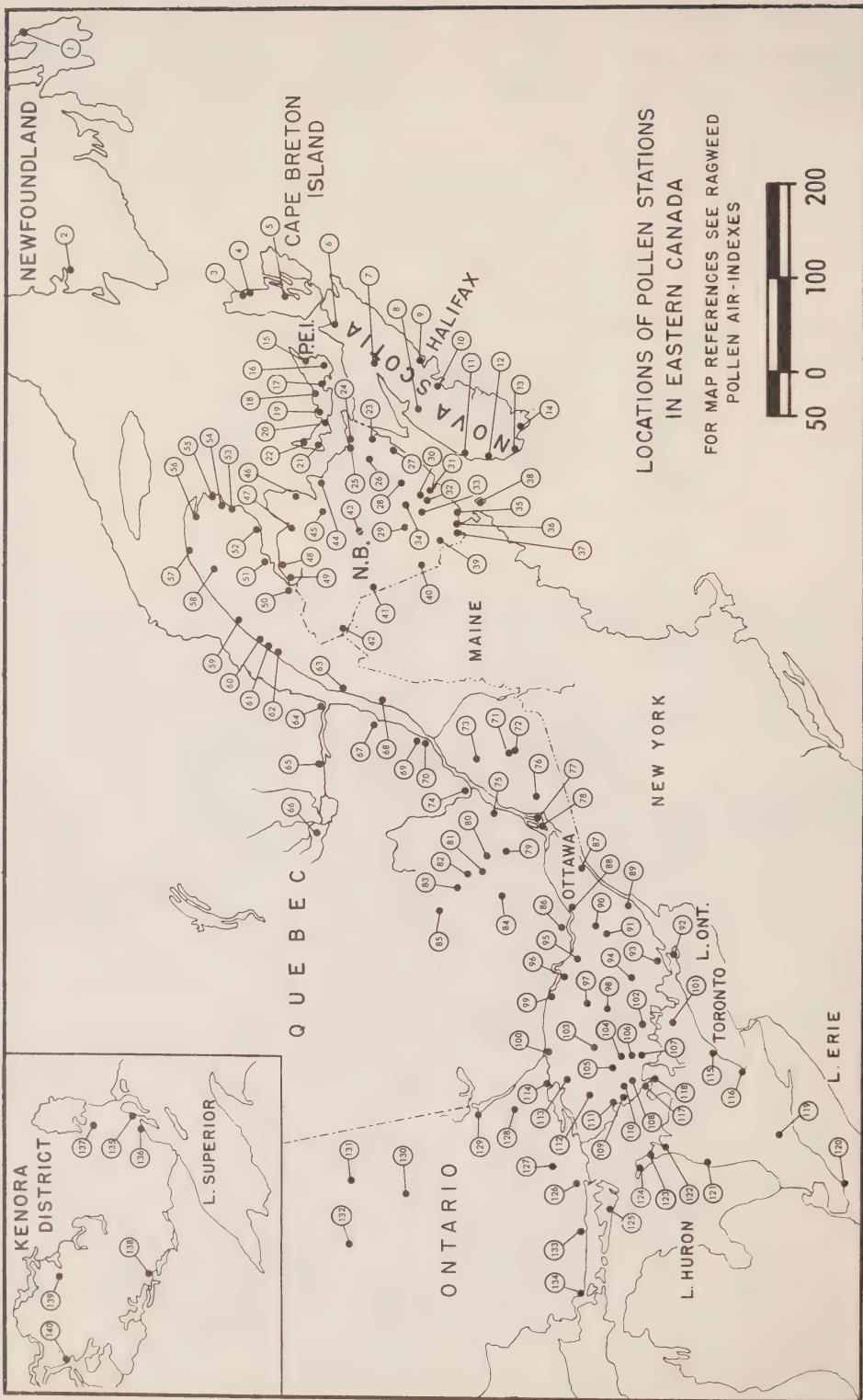
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survey

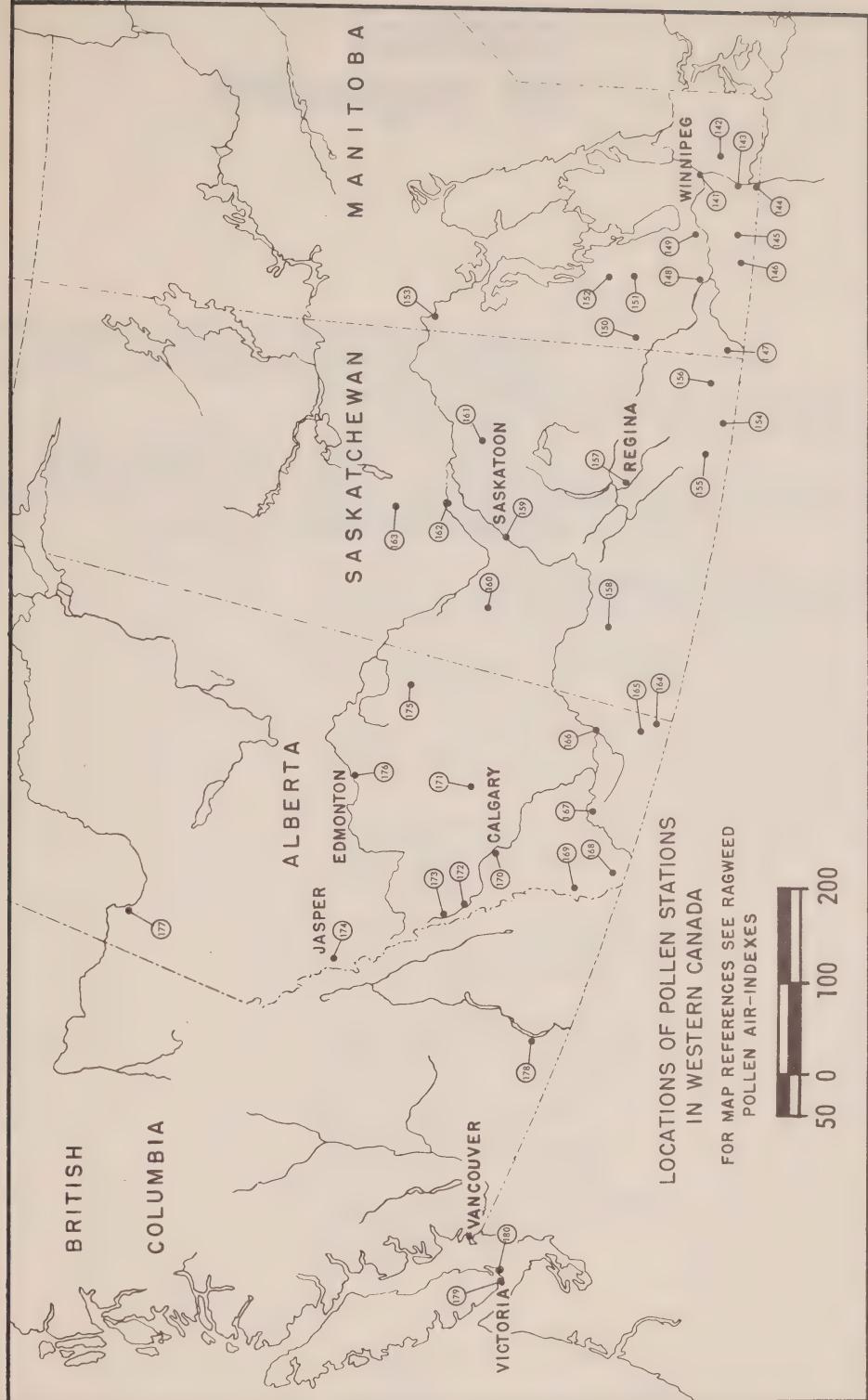
average  
ragweed  
pollen  
air-index

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	BRITISH COLUMBIA		
178.	Summerland	1952	.0
179.	Saanichton (Vancouver Island)	1953-54	.0
180.	Victoria	1958	0.8







# control of ragweed

The areas where individuals susceptible to ragweed pollen may find relief are indicated in this bulletin. Protection of these havens and the development of others will depend on control of ragweed plant.

The herbicide 2, 4-D, has been found to give effective and cheap control of ragweeds when properly applied. Any community wishing to carry out a control campaign should consult Provincial Departments of Agriculture for advice on the proper utilization of this chemical.

For more Information:

The Canadian Government Travel Bureau provides a free *Travel Counselling Service* to help you get the most out of a vacation in Canada.

The Bureau works in close co-operation with other Federal Government departments, provincial and local tourist associations and transportation companies.

We invite you to take full advantage of this free service. All you have to do is let us know your plans and requirements. Inquiries may be directed to any of the following offices:

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Ottawa, Canada

Canadian Government Travel Bureau,  
680 Fifth Avenue,  
New York, New York 10019

Canadian Government Travel Bureau,  
102 West Monroe Street  
(Corner Clark Street),  
Chicago, Illinois 60603

Canadian Government Travel Bureau,  
124 South Seventh Street (Northstar Center)  
Minneapolis, Minnesota 55402

Canadian Government Travel Bureau,  
1 Second Street (Corner Market),  
San Francisco, California 94105

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Los Angeles, California 90014

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